# The burden of antimicrobial resistance (AMR) in Trinidad and Tobago

Executive summary

- Antimicrobial Resistance (AMR) is a major global health threat, over **200 lives** have been lost each year since 1990 in Trinidad and Tobago due to AMR.

- In 2021, there were an estimated **224 UI (155-294)** deaths attributable to AMR and **862 UI (611-1,110)** deaths associated with AMR in this location.

- The largest number of deaths associated with AMR in 2021 occurred among those aged **70+** in the country.

- Among the most deadly pathogen-drug combinations in 2021 were *Staphylococcus aureus* resistant to methicillin, *Acinetobacter baumannii* resistant to carbapenems and *Streptococcus pneumoniae* resistant to carbapenems.

Figure 1 Number of deaths by underlying cause, and those associated with AMR in 2021
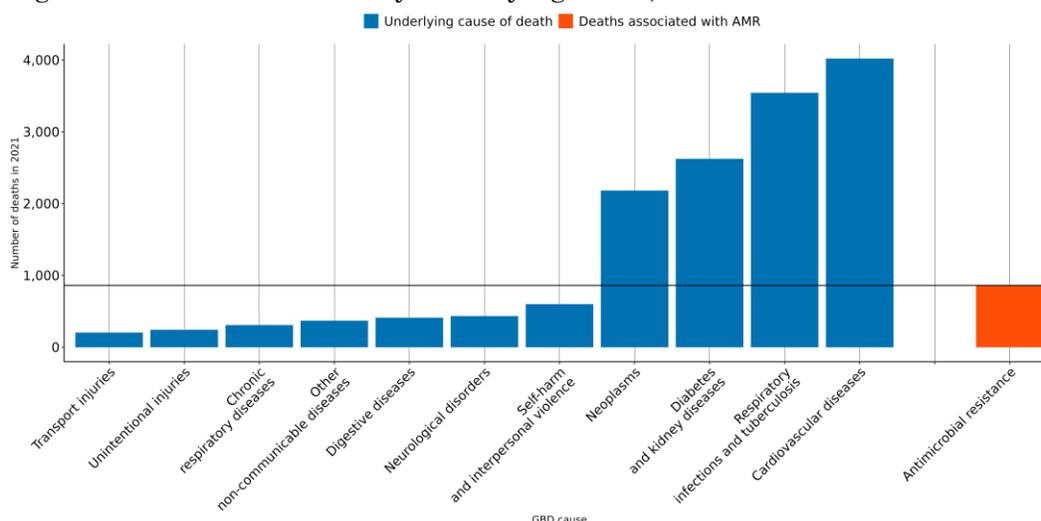
- In 2021, the number of deaths associated with AMR (orange bar in *figure 2*) were high compared to the most relevant underlying causes of death (depicted in blue) in the country. AMR associated deaths occur within multiple Global Burden of Disease (GBD) causes of death and AMR is not an underlying cause of death by itself.

- At the 2024 United Nations General Assembly high level meeting on antimicrobial resistance, country members agreed to aim for a **10% reduction** compared to 2019 baseline **(from 4.95 to 4.45 million)** in the global number of deaths associated with AMR by 2030. But our forecast indicates that in absence of concerted action, deaths associated with AMR could reach **5.5 million** (UI 4.8 - 6.2) if current trends continue. For Trinidad and Tobago, a 10% reduction means to decrease the number of deaths associated with AMR to **780**, but currently the trend for this country could reach up to **1,000 UI [687-1,360]** AMR-associated deaths in 2030.

AMR in Trinidad and Tobago

Key takeaways

- Antimicrobial Resistance (AMR) is a major global health threat, over *a million lives* have been lost each year since 1990.

- Globally, 4.71 (95% Uncertainty Interval (UI) 4.2-5.2) million deaths were associated with bacterial drug-resistant infections in 2021.

- And 1.14 (UI 1 - 1.3) million deaths were attributable to bacterial drug-resistant infection in the same year.

- *39 (UI 33 - 46) million deaths* directly attributable to bacterial AMR are projected to occur between 2025-2050 unless concerted action is taken. This equates to three deaths every minute.

Figure 2 Comparing 30 years of infection related deaths, and those associated with and attributable to AMR in Trinidad and Tobago between 1990 and 2019.
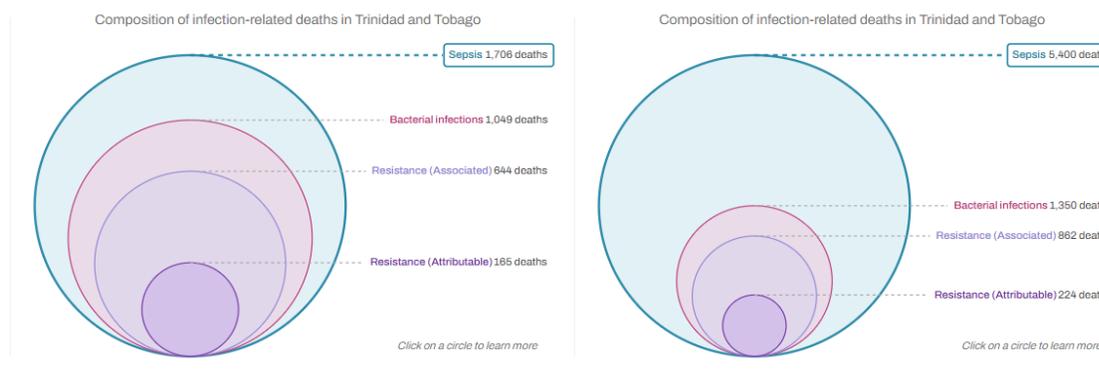
- To look at these and more visualization interactively visit [Measuring Infectious Causes and Resistance Outcomes for Burden Estimation (MICROBE)](#)

- In **Trinidad and Tobago** in 2021, there were an estimated **224 UI (155-294)** deaths attributable to AMR and **862 UI (611-1,110)** deaths associated with AMR. Here *"attributable deaths"* are considered to be those that would have been prevented had the drug-resistant bacteria causing the infections not been drug-resistant. *"Associated deaths"* are considered to be those that would not have occurred had the infections been prevented entirely.

- Across 204 countries, **Trinidad and Tobago has the 88th lowest** age-standardized mortality rate associated with AMR in 2021.

- *Table 1* shows the bacteria which caused most deaths in 2021 (↑ indicates an increasing estimated annual rate between 1990-2021, ↓ indicates a decreasing annual trend), and *table 2* shows the pathogen-drug combinations which caused most deaths in 2021.

Table 1. Bacteria which cause most deaths in 2021 (Number of deaths in parenthesis)

Overall susceptible and resistant		Associated		Attributable	
Staphylococcus aureus 241 UI (182-300)	↑	Staphylococcus aureus 148 UI (91-205)	↑	Acinetobacter baumannii 51 UI (40-62)	↑
Escherichia coli 171 UI (129-213)	↑	Escherichia coli 147 UI (110-185)	↑	Staphylococcus aureus 39 UI (20-59)	↑
Klebsiella pneumoniae 159 UI (120-198)	↑	Acinetobacter baumannii 126 UI (94-157)	↓	Klebsiella pneumoniae 31 UI (23-40)	↑
Streptococcus pneumoniae 157 UI (119-195)	↓	Klebsiella pneumoniae 122 UI (88-156)	↑	Escherichia coli 30 UI (21-40)	↑
Pseudomonas aeruginosa 155 UI (117-194)	↑	Streptococcus pneumoniae 98 UI (63-133)	↓	Streptococcus pneumoniae 25 UI (15-36)	↓
Acinetobacter baumannii 130 UI (97-162)	↓	Pseudomonas aeruginosa 79 UI (51-107)	↑	Pseudomonas aeruginosa 20 UI (12-27)	↑
Enterococcus faecalis 45 UI (34-56)	↑	Enterobacter spp. 30 UI (22-38)	↑	Enterobacter spp. 7 UI (5-9)	↑
Group A Streptococcus 44 UI (32-55)	↑	Enterococcus faecium 23 UI (16-29)	↑	Enterococcus faecium 5 UI (3-7)	↑
Enterobacter spp. 41 UI (31-51)	↑	Proteus spp. 23 UI (16-30)	↑	Serratia spp. 5 UI (3-6)	↓
Proteus spp. 35 UI (27-44)	↑	Serratia spp. 18 UI (12-23)	↓	Proteus spp. 4 UI (2-5)	↑

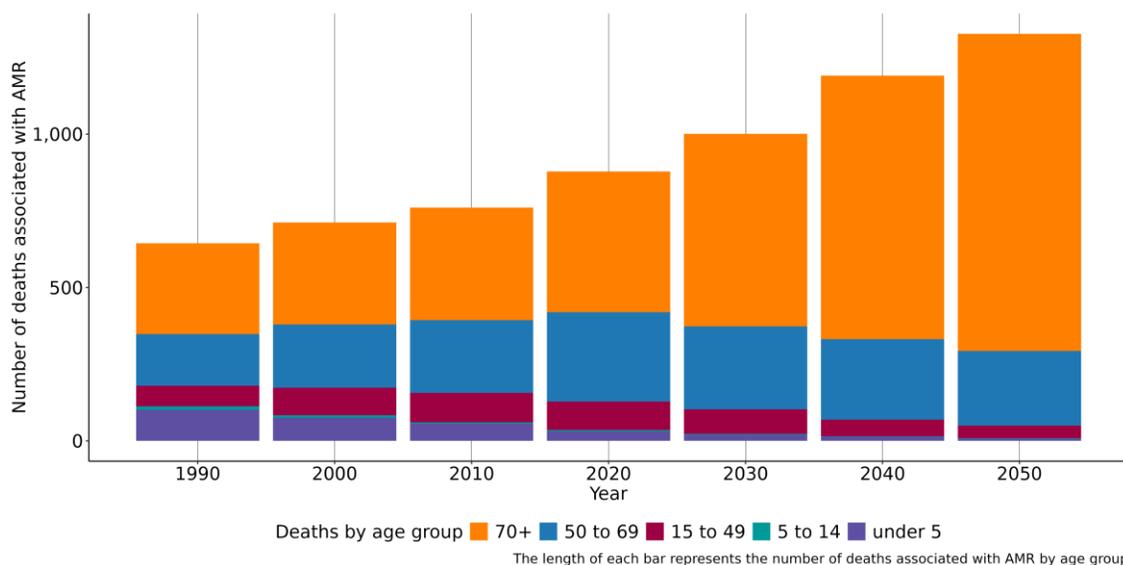Annualized rate of change (1990-2021): <-3%, -3% to -1.5%, -1.5% to 0%, 0% to 1.5%, 1.5% to 3%, 3% to 5%, >5.0%

Table 2. Combinations which cause most deaths in 2021 (Number of deaths in parenthesis)

Associated			Attributable		
Acinetobacter baumannii Carbapenems	125 UI (93-156)	↑	Acinetobacter baumannii Carbapenems	31 UI (23-39)	↑
Acinetobacter baumannii 4GC	123 UI (92-154)	↓	Staphylococcus aureus Methicillin	29 UI (12-45)	↑
Escherichia coli Aminopenicillin	118 UI (54-183)	↑	Streptococcus pneumoniae Carbapenems	21 UI (12-29)	↑
Klebsiella pneumoniae Fluoroquinolones	116 UI (83-149)	↑	Acinetobacter baumannii Fluoroquinolones	13 UI (10-16)	↑
Escherichia coli Fluoroquinolones	116 UI (65-167)	↑	Klebsiella pneumoniae Fluoroquinolones	12 UI (8-16)	↑
Staphylococcus aureus Methicillin	115 UI (44-186)	↑	Escherichia coli 3GC	9 UI (5-14)	↑
Acinetobacter baumannii 3GC	115 UI (84-146)	↓	Escherichia coli Fluoroquinolones	9 UI (3-15)	↑
Acinetobacter baumannii Anti-pseudomonal	110 UI (81-138)	↑	Acinetobacter baumannii Aminoglycosides	7 UI (5-9)	↓
Staphylococcus aureus Macrolides	105 UI (70-139)	↑	Pseudomonas aeruginosa Anti-pseudomonal	6 UI (4-9)	↑
Acinetobacter baumannii Fluoroquinolones	104 UI (76-132)	↑	Klebsiella pneumoniae Carbapenems	6 UI (4-8)	↑

Annualized rate of change (1990-2021): <-3%, -3% to -1.5%, -1.5% to 0%, 0% to 1.5%, 1.5% to 3%, 3% to 5%, >5.0%

 - Independently of antimicrobial resistance, the infectious syndromes accounting for the most deaths in 2021 were as follows (estimated thousands of deaths in parenthesis) bloodstream infections (746 UI (563-929)), lower respiratory infection (excl. COVID) (599 UI (457-741)), urinary tract infections and pyelonephritis (165 UI (123-207)), peritoneal and intra-abdominal infections (136 UI (98-173)) and infections of the skin and subcutaneous systems (129 UI (90-167)).

Figure 3. Number of deaths associated with AMR by age group between 1990-2020 and 2050 projection

Deaths by age group: ■ 70+ ■ 50 to 69 ■ 15 to 49 ■ 5 to 14 ■ under 5

The length of each bar represents the number of deaths associated with AMR by age group

- In Trinidad and Tobago, people aged 70+ saw the largest number of deaths associated with AMR both in 1990 and 2021, which indicates that 70+ continues to be particularly vulnerable to infections which are resistant to antibiotics. In 2021, the number of deaths associated with AMR among the 70+ was 452 UI (330-575), whereas the mortality rate per 100,000 was 404 UI (295-514).

Data sources for Trinidad and Tobago

In total, 520 million individual records or isolates covering 19,513 study-location-years were used as input data to our estimation process. The subset of input data for this country is shown below.

Table 3. Data inputs for Trinidad and Tobago by source type

Source type	Years	Sample size	Sample size units
Antibiotic use	1990-2009	16	Study-year datapoints
Literature studies	1990-2009	25,180	Cases/isolates/susceptibility tests

More information

About GRAM:

The purpose of the Global Research on AntiMicrobial resistance (GRAM) project is to **generate accurate and timely estimates of the magnitude and trends in antimicrobial resistance (AMR) burden** across the world, which can be used to inform treatment guidelines and agendas for decision-making and research, detect emerging problems and monitor trends to inform global strategies, as well as facilitate the assessment of interventions over time.

GRAM is the flagship project of the University of Oxford–IHME Strategic Partnership. GRAM was launched with support from the United Kingdom Department of Health and Social Care's Fleming Fund, and the Wellcome Trust.

All resources:

For all resources on AMR analysis at IHME, visit https://www.healthdata.org/antimicrobial-resistance.

To look at these and more visualization interactively visit Measuring Infectious Causes and Resistance Outcomes for Burden Estimation (MICROBE).

Data sources:

To download the list of data input sources by country, and AMR results by region, visit the Global Health Data Exchange (GHDx).

Contact us:

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